Surface salinities were generally lower at the sites along western Pamlico Sound, compared to sites along eastern Pamlico Sound and Core Sound (Figs. 2, 4); we were successful in establishing sites in low and high salinities, respectively. During 1988, salinity at the low salinity sites increased from approximately 10 $^{o}/_{oo}$ to 25 $^{o}/_{oo}$, reflecting a summer of low rainfall and reduced fresh water input from the Pamlico and Neuse Rivers (W. Kirby-Smith, Duke Marine Laboratory, personal communication). Thus, salinity differences between the two groups of sites were less in 1988 than in 1989 and 1990 (Fig. 4). During 1989 and 1990, salinity remained low throughout the summer at the low salinity sites (Fig. 4), reflecting summers of high rainfall (W. Kirby-Smith, Duke Marine Laboratory, personal communication). Indeed, rainfall was so heavy in 1989 that salinity was reduced at the high salinity sites during September and October 1989 (note the greater variation in salinity at the high salinity sites in 1989 compared to 1988 and 1990, Fig. 4).

Although recruitment was extremely variable among sites and years (Fig. 5), some patterns are apparent. Recruitment was generally greater in the high salinity sites along eastern Pamlico Sound and Core Sound, compared to the low salinity sites along the western side of Pamlico Sound. Although recruitment peaks were observed at Swanquarter and Mouse Harbor during 1988 and 1989, most low salinity sites experienced limited or no recruitment (Fig. 5). Recruitment was generally less at shallow depths (Fig. 5) and generally greater (> 50% of the total) on the bottom surfaces of shells (Fig. 6). At the high salinity sites there was an occasional recruitment peak in June. However, recruitment at all sites tended to be concentrated in September-October (Fig. 5) when water temperatures were highest (Fig. 3). Finally, the intensity of recruitment diminished from 1988 to 1990; during 1990 recruitment was sparser or absent from many sites with substantial recruitment in previous years (Fig. 5).

Accumulation of oyster spat on the permanent mats reflected the recruitment patterns observed on recruitment mats. Thus greater numbers (> 50% of the total) accumulated on the lower surfaces of shells during 1988 (Fig. 6) and other years (S. Ortega, personal observation). Similarly, in October of each year greater numbers of spat were found at the deep sites and the highest accumulations were observed at Swanquarter (1988), Avon (1989), Hatteras Island and Sleepy Creek (Figs. 5, 7). However, there is considerable evidence that shells on permanent mats were not as attractive to oyster larvae as the newly submerged shells on recruitment mats. Maximum densities on permanent mats were much lower than those observed on recruitment mats (note the different ordinate scales in Figs. 5 and 7). There was little accumulation of spat on permanent mats in Swanquarter and Mouse Harbor during 1989 (Fig. 7), even though larvae were abundant at these sites in September 1989 (Fig. 5). Fewer spat accumulated